WHAT IS CLAIMED IS:

1. A composite comprising:

Portland cement or blended cement including Portland cement;

at least one metallic material selected from the group consisting of iron, carbon steel and stainless steel in any of particulate, powder and fiber forms; and

content of calcium hydroxide being in a range of 15% to 60% by mass after hardening through hydration reaction, and the content of the metallic material being in a range of 10% to 70% by mass after hardening through hydration reaction.

2. The composite according to claim 1, wherein the content of calcium hydroxide is in a range of 20% to 50% by mass after hardening through hydration reaction.

3. The composite according to claim 1, wherein the content of the metallic material is in a range of 30% to 70% by mass after hardening through hydration reaction.

4. The composite according to claim 1, wherein said blended cement which is prepared by mixing at least one material selected from the group consisting of blast-

furnace slag, water-granulated blast-furnace slag, air-cooled blast-furnace slag, air-cooled slag, converter slag, copper slag, ferronickel slag, silica fume, fly ash, coal ash, clay, shirasu, diatomaceous earth and grain ash with Portland cement.

5. The composite according to claim 1, further comprising a neutron-absorbing material which is mixed in such a manner that the content of the neutron-absorbing material is in a range of 0.025% to 10% by mass after hardening through hydration reaction.

6. The composite according to claim 5, wherein the neutron-absorbing material includes at least one substance selected from the group consisting of boron carbide, boric acid, boron oxide, ferroboron and borated stainless steel.

7. Concrete manufactured by using a composite comprising Portland cement or blended cement including Portland cement, and at least one metallic material selected from the group consisting of iron, carbon steel and stainless steel in any of particulate, powder and fiber forms, and content of calcium hydroxide being in a range of 15% to 60% by mass after hardening through hydration reaction, and the content of the metallic material being in

a range of 10% to 70% by mass after hardening through hydration reaction.

8. A concrete cask comprising:

a cask body having a bottom but no lid in itself; and

a lid which can open and close off a top opening of said cask body;

wherein at least one of said cask body and said lid is made of concrete manufactured by using a composite comprising:

Portland cement or blended cement including Portland cement, and

at least one metallic material selected from the group consisting of iron, carbon steel and stainless steel in any of particulate, powder and fiber forms, and

content of calcium hydroxide being in a range of 15% to 60% by mass after hardening through hydration reaction, and the content of the metallic material being in a range of 10% to 70% by mass after hardening through hydration reaction.

9. The concrete cask according to claim 8, wherein said cask body is made of said concrete and metallic heat-

transfer fins are embedded in said cask body.

10. A method of manufacturing concrete by using a composite comprising Portland cement or blended cement including Portland cement, and at least one metallic material selected from the group consisting of iron, carbon steel and stainless steel in any of particulate, powder and fiber forms, and content of calcium hydroxide being in a range of 15% to 60% by mass after hardening through hydration reaction, and the content of the metallic material being in a range of 10% to 70% by mass after hardening through hydration reaction, said method comprising the steps of:

adding at least water to said composite;

mixing said composite with the water and shaping a resultant mixture; and

curing the mixture for at least 8 hours at a temperature of 120°C to 240°C and a relative humidity of 80% to 100%.

11. A method of manufacturing concrete by using a composite comprising Portland cement or blended cement including Portland cement, and at least one metallic material selected from the group consisting of iron, carbon steel and stainless steel in any of particulate, powder and

fiber forms, and content of calcium hydroxide being in a range of 15% to 60% by mass after hardening through hydration reaction, and the content of the metallic material being in a range of 10% to 70% by mass after hardening through hydration reaction, said method comprising the steps of:

adding at least water to said composite;

mixing said composite with the water and shaping a resultant mixture; and

curing the mixture for at least 24 hours at a temperature of 60°C to 120°C and a relative humidity of 80% to 100%.

12. A composite comprising Portland cement, characterized in that content of a hydroxide material is at least 15% by mass after hardening through hydration reaction, said hydroxide material retains water in the form of a crystalline structure and said hydroxide material has melting and decomposition temperatures exceeding 100°C.

13. The composite according to claim 12, wherein said hydroxide material is a hydroxide which is least soluble or insoluble in pure water.

14. The composite according to claim 13, wherein the

soluble amount of the hydroxide is 15 g or less per 100 g of pure water at 20° C.

15. The composite according to claim 12 further comprising at least one metallic material selected from the group consisting of iron, copper, tungsten, iron alloy, copper alloy, tungsten alloy, iron compound, copper compound and tungsten compound in any of particulate, powder and fiber forms.

16. The composite according to claim 15, wherein at least one metallic material selected from the group consisting of iron, iron alloy, copper and copper alloy is mixed in said composite in such a manner that the content of the metallic material falls in a range of 10% to 70% by mass after hardening through hydration reaction.

17. The composite according to claim 15, wherein the metallic material is selected from the group consisting of copper, copper alloy, tungsten, tungsten alloy and tungsten compound.

18. The composite according to claim 15, wherein at least one metallic material selected from the group consisting of tungsten, tungsten alloy and tungsten

compound is mixed in said composite in such a manner that the content of the metallic material falls in a range of 10% to 85% by mass after hardening through hydration reaction.

19. The composite according to claim 13 further comprising a neutron-absorbing material selected from the group consisting of boron carbide, boric acid, boron oxide, ferroboron and borated stainless steel, wherein the neutron-absorbing material is mixed in such a manner that the content of the neutron-absorbing material falls in a range of 0.025% to 10% by mass after hardening through hydration reaction.

20. The composite according to claim 12 further comprising a silica-bearing material.

21. Concrete manufactured by using a composite comprising Portland cement, and content of a hydroxide material retaining water in the form of a crystalline structure of which melting and decomposition temperatures exceed 100°C is at least 15% by mass after hardening through hydration reaction.

22. A concrete cask manufactured by using the concrete

of claim 7, wherein at least part of a structure made of the concrete is covered by a covering for isolating the concrete from external air.

23. A concrete cask manufactured by using the concrete of claim 21, wherein at least part of a structure made of the concrete is covered by a covering for isolating the concrete from external air.

24. A method of manufacturing concrete by using a composite comprising Portland cement, wherein content of a hydroxide material retaining water in the form of a crystalline structure of which melting and decomposition temperatures exceed 100°C is at least 15% by mass after hardening through hydration reaction, said method comprising the steps of:

adding at least water to said composite;

mixing said composite with the water and shaping a resultant mixture; and

curing the mixture for at least 8 hours at a temperature of 120°C to 240°C and a relative humidity of 80% to 100%.

25. A method of manufacturing concrete by using a composite comprising Portland cement, wherein content of a

hydroxide material retaining water in the form of a crystalline structure of which melting and decomposition temperatures exceed 100° C is at least 15% by mass after hardening through hydration reaction, said method comprising the steps of:

adding at least water to said composite;

mixing said composite with the water and shaping a resultant mixture; and

curing the mixture for at least 24 hours at a temperature of 60° C to 120° C and a relative humidity of 80% to 100%.